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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/684,103	10/05/2000	Douglas U. Mennie	47171-00271	3137

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 CUMMINS-ALLISON CORP.
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 CHICAGO, IL 60606

EXAMINER

SHAPIRO, JEFFERY A

ART UNIT	PAPER NUMBER
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3653

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p>09/684,103</p>	<p>Applicant(s)</p> <p>MENNIE ET AL.</p>	
	<p>Examiner</p> <p>Jeffrey A. Shapiro</p>	<p>Art Unit</p> <p>3653</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-29, 78-89 and 146-168 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-29, 78-89 and 146-168 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date <u>2/12/07</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____</p> |
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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/12/07 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 7-12, 14-29, 78-89, and 146-168 are rejected under 35 U.S.C. 103(a) as being unpatentable over McInerny (US 5,761,089) in view of Crane et al (US 5,151,607) and further in view of Fatula, Jr. et al (US 6,118,623) and still further in view of Green et al (US 6,353,317 B1).

McInerny discloses a high-speed currency bill evaluation device (10) that receives a stack of bills in hopper/input receptacle (12), an output receptacle (20 and 68) that receives bills after processing, a transport mechanism as shown in figure 2a, a magnetic scanhead (86), adjacent to a transport path, a cpu processor (302), rom and

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ram memories (318, 319), and optical sensors (80, 82, 84). McInerny also discloses comparing sampled data with stored master data, the cpu processor then determining based upon set threshold values whether the bill is authentic or not. See col. 23, lines 23-34, for example. McInerny further discloses handling multiple currencies from other countries as well as other documents such as food stamps. See col. 1, lines 29-40.

McInerny discloses, as described in Claim 9, that the scanhead is disposed transverse to the document transport path. See figure 4.

McInerny also discloses, as described in Claim 12, that the bills are transported so that a long edge of the bill is the leading edge of the bill.

McInerny does not expressly disclose, but Crane discloses that currency bills contain embedded magnetic security threads, and that both optical and metal/magnetic detectors are used to determine presence and location of a security thread. See Crane, col. 1, lines 22-55, col. 2, lines 1-15 and col. 4, line 43-col. 5, line 60. Note also that Crane in col. 1, lines 29-33 states that position of the "metallized thread" corresponds to denomination in U.S. currency.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have used both a magnetic detector and an optical sensor and associated circuitry, as taught by Crane, to determine presence of a security thread as well as its position on bills processed by McInerny's bill processing device.

The suggestion/motivation to do so would have been to prevent counterfeiting of bills. See Crane, col. 1, lines 29-39.

McInerny does not expressly disclose, but Fatula discloses a magnetic scanhead (22) that comprises several closely spaced magnetic sensors (208, 210, 306, 304), as illustrated in figures 12, 14, 20 and 21. Fatula's magnetic sensors appear to be about 5mm or less distance apart from each other, since Fatula describes fabrication of said sensors using "thin film" technology.

Regarding Claims 152, 155, 158, 160, 164 and 168, McInerny does not expressly disclose, but Fatula further discloses that the magnetic sensors are magnetoresistive sensors. See Fatula abstract.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have used Fatula's scanhead comprised of several closely spaced magnetic sensors in place of McInerny's scanhead, for the purpose of obtaining higher resolution.

The suggestion/motivation for doing so would have been to detect security threads of varying widths and lengths. Note also that Fatula discloses that the read resolution of the magnetic read head is dependent upon the spacing between the first and second shield layers. Again, this spacing is on the order of angstroms, as is well-known in the field of thin-film processing.

In light of the teaching of Crane that U.S. currency contains metallized security threads whose position correspond to a particular denomination, and that optical and magnetic detectors are used in conjunction with each other to determine currency denomination and authenticity based in part on the detection of the security thread and its position on the bill, it would have been obvious to one of ordinary skill in the art to have used appropriate optical and magnetic detectors and algorithms and circuitry in

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McInerny's bill processing device to determine presence and position of a security thread within a currency bill.

It further would have been obvious based on Fatula's teaching, that using a magnetic read head with several magnetoresistive (MR) sensors in Cranes magnetic head would have provided an improved read resolution for reading various threads found in bills.

Note also that Green further discloses mesoscopic MR sensors which detect magnetic fields as low as .05 Tesla over areas of 40nm by 400nm, which equates to tens of thousands of square nanometers.

Further regarding Claims 10, 11, 17, 18, 26, 27, 81-87, 147, 149-151, 153-154, 156, 157, 159, 161-163, and 165-167, it would have been obvious as a matter of design choice to have established the spacing anywhere between 5mm or less based upon the required detection accuracy required. Fatula and Green provide the motivation and teaching to use closely spaced magnetic detectors so as to better detect both course and fine magnetic patterns. The closeness of the MR sensors and the closeness of the first and second shield layers directly relates to the resolution one ordinarily skilled would be able to obtain in order to detect subtle magnetic differences in signals of varying features. Note also that one ordinarily skilled would also balance the resolution required with the bill's required travel speed.

4. Claims 13, 20, 29 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over McInerny (US 5,761,089) in view of Crane et al (US 5,151,607),

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further in view of Fatula, Jr. et al (US 6,118,623), further in view of Green et al (US 6,353,317B1) and still further in view of Winkler (US 5,394,992).

McInerny discloses the bill processing apparatus described above. McInerny does not expressly disclose running a bank note sorting device at various speeds. See Winkler, col: 1, lines 31, 32, col. 5, lines 53-68 and col. 6, lines 1-25, in which it is stated that speeds of up to 2000 documents per minute are achieved.

At the time of the invention, it would have been logical for one ordinarily skilled in the art to have caused the device of McInerny to run at various speeds up to 2000 documents per minute, since McInerny discloses a device capable of high-speed operation at col. 1, lines 40-45. Therefore, one ordinarily skilled in the art would have been motivated to run McInerny's device at an optimal speed, such as 800 or more documents per minute, that would produce the best throughput of bills under the particular processing conditions that batch of bills would require.

Response to Amendment

5. The Affidavit under 37 CFR 1.132 filed 2/12/07 is sufficient to overcome the rejection of Claims 7-12, 14-29, 78-89, and 146-168 based upon Jones.

Response to Arguments

6. Applicant's arguments with respect to Claims 7-29, 78-89, and 146-168 have been considered but are moot in view of the new ground(s) of rejection.

Applicant asserts that McInerny does not teach detecting "a magnetic security thread within a bill. This is accurate. However, Crane discloses detecting a security

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thread embedded within a bill. Further, even if McInerny discloses only detecting a magnetic pattern from magnetic ink dispersed on the surface of a bill, it would have been obvious to use the same or similar magnetic sensors to sense a magnetic thread within said bill as such a magnetic thread exhibits a particular magnetic pattern.

Newly cited Fatula and Green discloses magnetoresistive sensors fabricated using thin film and lithographic techniques, which reside within less than 0.5 mm distance between each other. It would have been obvious for one ordinarily skilled in the art to have used Fatula's and Green's teachings to replace McInerny's head with a head incorporating semiconductor-based MR sensors. While McInerny discloses "comparing the locations of two objects" it would still have been obvious to determine the location of the particular magnetic feature, such as a security thread, in relation to other parts of the bill, such as a leading edge, particularly in light of Crane's teaching cited above.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey A. Shapiro whose telephone number is (571)272-6943. The examiner can normally be reached on Monday-Friday, 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick H. Mackey can be reached on (571)272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAS 

April 2, 2007



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